

2

Docket No. G-069US02CIP  
Serial No. 09/772,280In the Claims

Claims 1 – 8 (canceled)

9. (previously amended) A method for carrying out a chemical or biochemical protocol comprising:

depositing liquid sample volumes into a plurality of sample receiving regions on at least one mobile sample transport member; and

moving the sample transport member along a pathway such that said sample receiving regions move through at least one temperature regulated zone upon which a thermal transfer member acts, wherein said thermal transport member cycles between at least two temperatures while said sample receiving regions are moving through said at least one temperature regulated zone; and

wherein the protocol is carried out in an atmosphere sufficiently humid to reduce or prevent evaporation of the liquid sample volumes.

10. (original) The method of claim 9 further comprising adding at least one reagent to the sample receiving regions while the sample receiving regions are moving along said pathway.

11. (original) The method of claim 9 wherein the sample receiving regions comprise areas on a substrate.

12. (original) The method of claim 11 wherein the areas on the substrate comprise wells.

13. (original) The method of claim 12 wherein the sample receiving regions comprise a plate, having a plurality of wells therein, said wells having a thin film on their bottom surfaces.

14. (original) The method of claim 11 wherein the substrate is a film.

15. (original) The method of claim 14 wherein a surface of the film is sufficiently hydrophillic to allow adherence of individual liquid sample volumes in the form of droplets on the surface.

3

Docket No. G-069US02CIP  
Serial No. 09/772,280

16. (original) The method of claim 14 wherein said film comprises a matrix of hydrophobic areas and hydrophillic areas, said hydrophillic areas being sufficiently hydrophillic to allow adherence of individual liquid samples in the form of droplets on said hydrophillic areas.

17. (original) The method of claim 11 wherein the substrate comprises a filament.

18. (original) The method of claim 17 wherein the filament is sufficiently hydrophillic to allow adherence of individual liquid sample volumes in the form of droplets on the filament.

19. (original) The method of claim 17 wherein the filament is conducting, and the droplets are heated by passing electric current through the filament.

20. (original) The method of claim 9 wherein said sample transport member moves along said pathway continuously.

21. (previously amended) The method of Claim 9 wherein said sample transport member moves along said pathway in steps.

22. (original) The method of claim 9 wherein said sample transport member is moved along said pathway by reels which frictionally engage the sample transport member.

23. (original) The method of claim 9 wherein the sample receiving regions are covered by a non-miscible liquid in order to prevent evaporation of the liquid sample volumes.

Claim 24 (canceled).

25. (original) The method of claim 9 wherein one of the at least two temperatures is about 50°C, and another of the at least two temperatures is about 94°C.

26. (original) The method of claim 9 wherein said thermal transfer member cycles through said at least two temperatures a plurality of times while said sample receiving regions are moving through said at least one temperature regulated zone.

27. (original) The method of claim 9 wherein said thermal transfer member cycles through said at least two temperatures from about 2 to about 35 times while said sample receiving regions are moving through said at least one temperature regulated zone.

28. (original) The method of claim 9 wherein the protocol is carried out in only one apparatus.

29. (original) The method of claim 9 wherein a plurality of sample receiving regions are processed in parallel in said at least one temperature regulated zone.

30. (original) The method of claim 9 wherein said chemical or biochemical protocol comprises a nucleic acid amplification procedure.

31. (original) The method of claim 30 wherein said chemical or biochemical protocol comprises a polymerase chain reaction.

32. (original) The method of claim 30 wherein said chemical or biochemical protocol comprises determining the identity of at least one polymorphic nucleotide in the product of said nucleic acid amplification procedure.

Claim 33-50 (canceled).

51. (previous presented) A method for carrying out a chemical or biochemical protocol comprising:

depositing liquid sample volumes into a plurality of sample receiving regions on at least one mobile sample transport member; and

moving the sample transport member along a pathway such that said sample receiving regions move through at least one temperature regulated zone upon which a thermal transfer member acts, wherein said thermal transport member cycles between at least two temperatures while said sample receiving regions are moving through said at least one temperature regulated zone;

wherein said sample transport member is moved along said pathway by reels which frictionally engage the sample transport member.

5

Docket No. G-069US02CIP  
Serial No. 09/772,280

52. (previously presented) A method for carrying out a chemical or biochemical protocol comprising:

depositing liquid sample volumes into a plurality of sample receiving regions on at least one mobile sample transport member; and

moving the sample transport member along a pathway such that said sample receiving regions move through at least one temperature regulated zone upon which a thermal transfer member acts, wherein said thermal transport member cycles between at least two temperatures while said sample receiving regions are moving through said at least one temperature regulated zone; and

wherein the sample receiving regions are covered by a non-miscible liquid in order to prevent evaporation of the liquid sample volumes.

53. (new) The method according to claim 9, wherein said pathway is a channel.

54. (new) The method according to claim 9, wherein said thermal transfer member is a metal bar in fluid communication with a plurality of water sources that provide water having said at least two temperatures.

55. (new) The method according to claim 9, wherein said sample transport member is continuously flowing through said at least one temperature regulated zone.

56. (new) The method according to claim 11, wherein said substrate is a microfluidic substrate.

57. (new) The method according to claim 56, wherein said microfluidic substrate comprises at least one microchannel.

58. (new) The method according to claim 9, wherein said pathway is a microchannel.

59. (new) The method according to claim 57, wherein said substrate is contacted with a thermal transfer member is a metal bar in fluid communication with a plurality of water sources that provide water having said at least two temperatures.

J:\GEN\069.US02.CIP\Amend-Resp\Amendment.doc\UNB\sl

6

Docket No. G-069US02CIP

Serial No. 09/772,280

60. (new) A method for carrying out a chemical or biochemical protocol comprising:  
depositing liquid sample volumes into a plurality of sample receiving regions on at least one  
mobile sample transport member; and

moving the sample transport member along a pathway such that said sample receiving regions  
move through at least one temperature regulated zone upon which a thermal transfer member acts,  
wherein said thermal transport member cycles between at least two temperatures while said sample  
receiving regions are moving through said at least one temperature regulated zone.